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ABSTRACT

A description is provided of an associate degree in nursing science course, "Rapid Interpretation of Electrocardiograms (EKG's)," designed to emphasize the nurse's role in the interpretation of the basic EKG and the medical interventions necessary to treat arrythmias. The first section of the course description provides information on curricular placement, class structure, and targeted student population. Following a glossary of relevant terms, course content is discussed in terms of the rationale for the course, long-range course goals and objectives, end-of-course goals and objectives, and units of instruction. A list of texts and other instructional materials for the course is followed by descriptions of the six course units: (1) normal conduction system and EKG tracings; (2) coronary anatomy and electrical axis; (3) abnormalities in conduction; (4) atrial arrythmias and treatment; (5) ventricular arrythmias; and (6) treatment of ventricular arrythmias, bradycardia, and tachycardia. A listing of instructional materials and a detailed description of goals and objectives is provided for each class unit. An evaluation section on student achievement and course revision completes this document. (UCM)

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BASIC INTERPRETATION OF EKG's

N203

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COURSE DESCRIPTION

N203: Rapid interpretation of EKG's. Lecture four hours per week to be taken along with N204 Cardiopulmonary Nursing; with emphasis on the nurses role in the interpretation of the basic EKG and the medical interventions necessary to treat the arrythmias.

Curricular Placement:

The course is included in the College School of Nursing Curriculum, a nursing program designed for the beginning nurse with the goal of Associate Degree in Nursing Science. The students come from a variety of backgrounds; the spectrum range from LVN's to those students who have no medical experience.

Class Assignment:

The class will be offered in the spring semester of the second year for 6 weeks, meeting twice a week for two hours of lecture, demonstration and practice in each class. The students will be concurrently enrolled in N204 Cardiopulmonary Nursing, a class that consists of 3 hours a week lecture and eight hours a week clinical experience for the complete 16 week semester.

The classes of N203 will be structured for lecture presentation with use of media and practical experience. To

promote an active environment for learning the class size will be restricted to 20 or less students.

Student Population:

The student who wishes to obtain their ADN will have developed professional level skills in the areas of general nursing through the first three semesters of the nursing program. This same student will hopefully also have been able to practice their skills through the summer break there by adding experience in clinical nursing. The practice of nursing reflects a synthesis of theoretical and empirical knowledge with the ability to apply that knowledge in problem solving methods. Nursing must develop the ability to utilise all the resources available to them in assessing their patients. The most widely used mechanical assessment tool for cardiovascular patients is the EKG. This class will give the student beginning knowledge of the EKG and enable them to be employed in an intensive care or a step down unit upon graduation.

The anticipated student drop out rate is low. This is based on the premise that most students who have completed the first three semesters of the course will be motivated to finish the entire course.

The student that finishes this course will continue in the nursing program and finish the third and fourth semesters. These same students will take and pass the state board exam for nurses and work in a medical setting practicing her profession.

GLOSSARY

The following words are defined as appropriate to this course:

Arrythmias - alterations in the normal heart's electrical activity possibly resulting in life threatening situations.

Basic arrythmias - those alterations in the normal heart's electrical activity that are occur most often in the intensive care unit.

Conduction system - the pathways in the heart that the electrical impulse travels down that result in the heart contraction.

Electrocardiogram (EKG) - A record of the electrical activity of the heart. EKG tracing - the written record of the hearts electrical activity obtained form the monitor.

Monitor - the TV like screen that visually shows the patients EKG. Monitoring - The patient is attached to an electrocardiographic machine and a trained person is watching their heart rhythm at all times.

Per diem - those nurses employed on an as needed basis.

COURSE CONTENT

Rationale:

The changing role of the nurse demands that students aquire the knowledge and skills necessary not only for the care of the sick, but also those skills necessary for making quick and proper decisions about treatment in the case of an emergency. Nurses are developing more autonomy and therefore accountable legally and ethically for their actions. The nurse needs as much information as possible to allow her to make the proper decisions for her patient and for herself. Heart disease is the nations number one killer and there is increased demand for nurses prepared to handle cardiac emergencies. This course is designed to help prepare the nurse for such emergencies.

Long Range Course Goals:

The course goals reflect the goals of Camarillo College and their Nursing Department which include successful employment after graduation and the nurses desire to further education. Long term goals include:

1. The student will be able to work on a nursing unit that has monitoring as part of it's care.
2. The nurse will be able to interpret the rhythm on the monitor and know if it is abnormal.

3. The nurse who is working with monitored patients on a full time basis will seek further education in the area of EKG interpretation.

Long Range Course Objectives:

1. Within six months 15% of the students who complete this course will be working on either a step down unit or intensive care unit on at least a part time basis.

2. Within six months of completion of this course 10% of the students will be working on a per diem basis and will accept assignments to any monitored unit.

3. Within one year, of the 15% of students employed on a monitored unit 14% will have completed a more complete course in EKG interpretation.

End of the Course Goals:

1. The student will be able to describe the normal conduction system and basic alterations in the norm.

2.The student will be able to label a normal EKG tracing as to the specific waves and intervals and their average length of time.

3. The student will be able to recognize basic arrythmias on EKG tracings.

4. The student will be able to suggest treatment methods and appropriate nursing interventions for the arrythmias studied.

End of the Course Objectives:

1. When tested the student will with 100% accuracy describe the normal conduction pathways.

2. When tested the student will with 80% accuracy recognize the abnormal conduction pathways covered in this course.

3. When tested the student will with 100% accuracy label the EKG tracing including the specific waves, intervals and their average length of time.

4. When tested the student will with 80% accuracy recognize the basic arrythmias covered in this class.

5. When tested the student will with 85% accuracy be able to suggest acceptable treatments and appropriate nursing interventions for the basic arrythmias covered in this class.

Classes of Instruction:

Class 1	Normal conduction system, sinus rhythm, and EKG tracings
	4 hours: lecture and practice
Class 2	Coronary anatomy, and Electrical axis
	4 hours: lecture and practice
Class 3	Abnormalities in conduction
	4 hours: lecture and practice
Class 4	Atrial arrythmias and treatment
	4 hours: lecture and practice
Class 5	Ventricular arrythmias

4 hours: lecture and practice

Class 6 Ventricular arrythmia treatment, bradycardia and tachycardia

4 hours: lecture and practice

MATERIALS OF INSTRUCTION

Texts and Manuals:

One textbook and one workbook contain the required reading/work for this course and they are available in the college bookstore. They are:

1. Goldberger, A.L., and Goldberger, E. Clinical Electrocardiography. Saint Louis : C.V. Mosby Company, 1984.

2. Clark, M.F., Normal Conduction System and the Electrocardiogram. Philadelphia : F.A. Davis Company, 1985.

Recommended texts are:

1. Dubin, D., Rapid interpretation of EKG's. Tampa : Cover publishing company, 1978.

2. Menard, R.H., Introduction to Arrythmia Recognition. Burlingame CA. : California Heart Association, 1986.

Library Resources:

In addition to the texts mentioned above, there are articles mentioned in the weekly assignments that are required or are available for the student to read if further information or review is required. Additional reading Resources will be placed in the reference holdings for

student use at the college library. All students will be expected to complete assigned readings as a minimum class requirement; however it is the instructors expectation that the students will use the reserved readings to seek extra information on an interesting subject, or one not completely understood. The reserved readings can also be utilized to expand readings to related subjects by using the reference list at the end of each article.

There are no required audio-visual materials over and above those used in class. The slides of the example EKG strips used in class as teaching aids will be on reserve in the nursing media center for review as the student feels necessary.

UNITS OF INSTRUCTION

Due _____

UNIT 1

Normal conduction system and EKG tracings

This Class will cover the normal conduction pathways within the human heart and their relationship to the cardiac contraction. We will also look at the EKG tracing and discuss normal sinus rhythm. Identification of each of the lines and waves on the normal EKG and what each represents will be covered. This class will thoroughly cover the norms so that the abnormities will be more easily identified.

Goals:

1. The student will be able to describe the normal conduction system of the human heart.

2. The student will be able the label an EKG tracing of normal sinus rhythm.

Objectives:

1. In written form, in class, without notes, the student will be able to draw and label on a picture of a human heart the normal conduction system with 100% accuracy.

2. In written form, in class, without notes the student will be able to label with 100% accuracy an EKG tracing of normal sinus rhythm.

3. In class when given 10 EKG tracings the student

will correctly identify normal sinus rhythm with 95% accuracy.

Sample test items for this unit and the other five are included in the nest section

Readings for Unit 1

Required:

Clark, pages 1-81.

Goldberger and Goldberger, chapters 1, 2 and 4.

Slota, Margaret. "An Introduction to EKG Interpretation". Nursing 85, January 1985, 15(1). (library reserve)

Recommended:

Menard, chapters 1-3.

Dubin, chapter 1.

Due_____

UNIT 2

Coronary anatomy and Electrical axis

This class will cover the normal coronary anatomy and how it changes in disease states. We will also look at the normal axis and any expected changes in certain diseased states. We are continuing to look at the normal cardiac status but the changes found in certain disease states are covered.

Goals:

1. The student will be knowledgable of the normal human cardiac anatomy and how it changes in certain diseased states.

2. The student will understand what the normal electrical axis of the human heart is and how it changes in certain disease states.

3. The student will be able to figure various axis deviations.

Objectives:

1. In class, without notes, when given a diagram of a normal human heart the student will label it with 100% accuracy.

2. In class, when given 30 multiple choice questions on the normal and abnormal anatomy of the human heart, the

student will complete them correctly with 80% accuracy.

3. In class, when given 15 multiple choice questions regarding electrical axis and axis deviation in the human heart, the student will complete them with 80% accuracy.

4. In class, when given 5 EKG tracings the student will figure the electrical axis correctly on at least 4 of them within 20 degrees.

Readings for Unit 2

Required:

Clark, pages 85-105.

Goldberger and Goldberger, chapters 5 - 6, & 8.

EKG practice strips (class handout)

Recommended:

Menard, chapter 7.

Dubin, chapter 4.

Due_____

UNIT 3

Abnormalities in conduction

This class will consider the abnormal patterns of conduction. This will include the bundle branch blocks, first, second and third degree AV blocks and hemiblocks. Disease states that may cause these blocks will be considered along with their proper treatment and appropriate nursing interventions.

Goals:

1. The student will understand the abnormal pathways for conduction.

2. The student will know the disease states that cause these abnormal pathways.

3. The student will cover possible treatments and appropriate nursing interventions for the abnormal conduction responses and the diseases covered.

Objectives:

1. When tested on the abnormal pathways in the human heart ,in class the student will pass a 15 question multiple choice test with 90% accuracy.

2. When given 10 disease states, in class, the student will be able to match them with the type of abnormal conduction pattern that may occur in the human heart with a

80% accuracy.

3. When given 8 treatments used in abnormal conduction patterns in the human heart the student will match them to the conduction pattern with 80% accuracy.

Readings for Unit 3

Required:

Clark, pages 107 to end of book.

Goldberger and Goldberger, chapters 7 & 15.

Recommended:

Menard, chapter 4.

Dubin, chapter 7.

Copeland, R.A. "Correctly Identifying Hemiblocks", American Journal of Nursing, April 1983, 83(4). (library reserve)

Due_____

UNIT 4

Atrial arrythmias and treatment

This class will cover the basic atrial arrythmias, including; premature atrial contractions, paroxysmal atrial tachycardia, AV junctional rhythms, atrial fibrillation and atrial flutter. The treatments and appropriate nursing interventions that are used for these arrythmias in both acute and chronic states will be covered.

Goals:

1. The student will learn the mechanisms of the 5 basic atrial arrythmias.

2. The student will be able to differentially diagnose the 5 atrial arrythmias.

3. The student will understand the treatment of the basic atrial arrythmias in both the acute and chronic states.

4. The student will plan appropriate nursing interventions for patients with atrial arrythmias.

Objectives:

1. When tested in class the student will pass a mixed quick score type test of 20 questions on the mechanisms of the basic atrial arrythmias with 80% accuracy.

2. When tested in class the student will identify 20 rhythm strips of possible atrial arrythmias with 80%

accuracy.

3. When tested in class the student will pass a multiple choice test of 15 questions on the treatments of atrial arrythmias with 80% accuracy.

4. Outside class the student will write a 300-500 work care plan covering the nursing care of a patient with a specific atrial arrythmia to be assigned in class.

Readings for Unit 4

Required:

Goldberger and Goldberger, chapters 11-13.

Kerr, P. R. " The Treatment of Arrythmias". Nursing 86, May 1986, 16(5). (library reserve)

EKG practice strips (class handout).

Recommended:

Menard, chapters 5-6.

Dubin pages 72 - 90.

Due_____

UNIT 5

Ventricular arrythmias

This class will cover the basic ventricilar arrythmias, including; premature ventricular contractions, ventricular fibrillation, ventricular flutter, and cardiac arrest. The basic mechanisms that cause the arrythmias will be discussed.

Goals:

1. The student will learn the mechanisms of the basic ventricular arrythmias.

2. The student will be able to differentially diagnose the 5 basic ventricular arrythmias.

Objectives:

1. When tested in class on the mechanisms of the ventricular arrythmias. using a 20 question multiple choice quiz the student will complete the quiz with 80% accuracy.

2. When tested in class the student will be able to identify the type of ventricular arrythmia that is shown on the 20 EKG tracings with 90% accuracy.

Reading for Unit 5

Required:

Goldberger and Goldberger, chapters 14 & 17.

Cook, E.A., " Ventricular Arrythmias, Life or Death". Heart & Lung, January 1987 16(1) (Library reserve)

Recommended:

Menard, chapters 8-9.

Dubin, pages 91-150.

Due_____

UNIT 6

Treatment of Ventricular Arrythmias,

Bradycardia and Tachycardia

This class will cover the treatment of ventricular arrythmias, both acute and chronic. The appropriate nursing interventions as they apply to the specific arrythmias will also be covered. Bradycardia and Tachycardia arrythmias, their causes and treatment will be looked at. The class will also cover any material that was not covered adequately in previous classes and a time for questions will be provided.

Goals:

1. The student will be able to discuss the treatment of ventricular arrythmias, acute and chronic.

2. The student will plan appropriate nursing interventions for patients with ventricular arrythmias.

3. The student will obtain knowledge about the brady and tachy arrythmias not already covered.

4. The student will have a general knowledge about the treatment of brady and tachy arrythmias.

5. The student will have any questions he has about basic arrythmias answered by the end of this unit.

6. The student will be able to accurately analyze an EKG tracing in a systematic manner.

Objectives:

1. When tested in class the student will complete a 15 question multiple choice quiz about the treatment of both chronic and acute ventricular arrythmias with 80% accuracy.

2. When tested in class the student will complete a 12 question multiple choice quiz covering the brady and tachy arrythmias with an 80% accuracy.

3. When tested in class the student the student will complete a 10 question multiple choice quiz covering the treatment of the brady and tachy arrythmias with an 80% accuracy.

4. Outside of class the student will write a 300-500 word care plan for a patient with a ventricular arrythmia to be assigned in class.

5. In class when given 10 EKG tracings the student will accurately analyze them following the systematic manner taught in class 90% of the time.

6. When questioned in class the student will either ask questions or deny that he has any questions at the completion of the class.

Readings for Unit 6

Required:

Goldberger and Goldberger, chapter 16.

Kerr, P.R.,"The treatment of Arrythmias", Nursing 86, May 1986, 16(5).(library reserve).

Recommended:

Menard, chapter 10.

Dubin, pages 160 - 174.

Sample Test Items:

All the quizes will be held during the first 30 - 45 minutes of the class. You will be tested on what was covered in the previous weeks lecture. You will be expected to complete all quizes at the required proficiency and pass the final exam to complete the class. The quizes will consist of a variety of quick score questions. For example:

1. T F The atrial contract separately from the ventricle.

2. The _____ is the conduction pathway connection between the atria and ventricle.

3. A premature ventricular contraction is
   a. wide and bizarre in appearance
   b. of the same configuration as the previous QRS
   c. interrupts the normal sinus rhythm
   d. is not a problem

4. Match the correct response in column 1 with column 2.

1	2
atria	the bottom chambers
ventricle	the normal rhythm
sinus	an abnormal rhythm
PAT	the top chambers

There will be a 60 questions on this material on the final exam for this class. There will be multiple choice and identify type questions. A review session before the final will be scheduled for anyone who feels they need extra time on the material. The review will be scheduled at a later time.

EVALUATION

Evaluation will consist of student achievement and course revision as provided for in the course outline.

Student Achievement:

The Mastery system is based on learning by objectives. Each unit contains goals and objectives that may be utilized by the student to insure proper understanding of the material. Item analysis, objective based test questions and unit objectives completion check lists will be tallied to determine final point averages. Student performance in nursing care plans, quizes and the final exam will be utilized to determine the grade given for the course.

Scores from the nursing care plans, in class objective criteria and the final exam will be considered to determine the final grade in the following manner.

To earn a B in this class the student will pass the unit objectives at the stated criteria level. Passing the objectives at less then 100% will lower the letter grade. Missing 2 objective at criterian level will lower the grade to a B-, four objectives earn a C+ etc. Grades on the two required papers may move the students letter grade from B to a possible A.

Students will be advised that the instructor will be available for conferences during office hours or by special appointment. Because of the commitment of the adult learner in a the third semester of an ADN program it is the

instructors expectation that 90% of the students will complete the course with a B or better grade. The nursing department requires that a student maintain a minimum of a C in the nursing classes to continue to the next level. Those students who for personal or economic reasons are unable to complete the program with that requirement will be allowed to retake the class the following spring.

Course Revision:

In the case of more then 30% of the students are unable to complete 50% of the objectives successfully in one unit the instructor will review the material missed and a make-up quiz will be given in class time.

Course revision is dependent on several factors which must be considered before final revisions are made. New knowledge in the field of cardiac nursing is constantly developing and must be incorporated into the course content. Item analysis of quizes and the final exam and review of objectives to test questions in meeting the content needs of the course is done on a yearly basis. As new multi-media facilities become available to the instructor she will incorporate them into the content and presentation of the course to increase stimulus variation.

At the conclusion of the course, the students will be asked to complete an Instructor Rating Scale provided by the college, to determine the effectiveness of the content presentation, instructor's abilities and the application of

course material to the students field of nursing. The student responses are anonymous and confidential. Response sheets will be reviewed by the instructor and her colleagues to determine those areas where improvement is indicated in content or presentation.

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